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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/680,780	10/06/2003	Kenneth E. Anderson	495812005800	5857

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MORRISON & FOERSTER LLP
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EXAMINER

BOUSIKARIS, LEONIDAS

ART UNIT PAPER NUMBER

2872

DATE MAILED: 08/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/680,780

Applicant(s)

ANDERSON ET AL.

Examiner

Leo Boutsikaris

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-84 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-84 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

Corrected drawings were received on 5/11/2005. These drawings are Fig. 1. The corrections are approved by the examiner.

Claim Objections

Claims 45-48 are objected to because of the following informalities: Claims 45, 48 recite an SLM, which lacks antecedent basis. Claims 46-47 inherit the deficiency of claim 45 from which they depend.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 2-4, 20, 35-37, 40-42, 58, 65, 74-76, 78-83 are rejected under 35 U.S.C. 102(b) as being anticipated by Liu (US 2002/0015376).

Regarding claims 2-4, 20, 35, 40-42, 65, 74, 78-83, Liu discloses a method and a system for holographic recording and reading of data in a holographic medium, wherein a reference

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beam 112 and a first signal beam 114 corresponding to a first data are made to interfere inside holographic medium 100 at a location 102, thus creating a first hologram 200, the first signal beam having a beam waist (left line segment joining two divergent beams in Fig. 3).

Subsequently, the holographic medium is rotated and the same reference beam 112 and a second signal beam 114 corresponding to a second data are made to interfere inside holographic medium 10 at a different location 102, thus creating a second hologram 200', the second signal beam having a beam waist (right line segment joining two divergent beams in Fig. 3). See Figs. 1, 3 and [0190], [0201]. The first and second holograms overlap, however, the first beam waist and the second beam waist do not overlap at any point (see Fig. 3). During reconstruction of the holograms, a spatial filter 130 is placed in front of the detector to substantially contain only a reconstruction of the first hologram and block a reconstruction of the second hologram that is overlapping with the first hologram in the holographic medium (Fig. 4, [0202]).

Regarding claims 36-37, 58, 75-76, the holographic medium 100 is located at the focus of lens 120, i.e., at its Fourier plane, which can also be considered as an image plane of the first signal beam.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 1, 7-13, 29-31, 33-34, 39, 45-51, 68-73, 84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu (US 2002/0015376) in view of Tao (Optics Letters article).

Liu disclose all the limitations of the above claims except for showing that the holographic data is in page format, i.e., being encoded by an SLM, instead of being binary data, i.e., existence of absence of a holographic grating. Tao discloses a holographic storage method wherein a mixture of angular and spatial multiplexing is used to store multiple images, i.e., data imposed on an object beam by an SLM, in a holographic medium. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the holographic recording system of Liu for recording (and reading out) multiple holographic images, as taught by Tao, since the storage capacity in storing two dimensional data is extremely high. It is noted that an SLM can easily be incorporated in the system of Liu, without affecting any fundamental principle of its operation.

Claims 21-22, 59-63, 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu (US 2002/0015376) in view of Curtis (US 5,703,705).

Liu discloses all the limitations of the above claims except for teaching that the waists of the signal beams may be formed outside the holographic medium. Curtis discloses a method for holographic multiplexing wherein a plurality of holograms are recorded in the same spatial location, with the recording beams having their waists formed outside the recording medium (see Fig. 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a signal recording beam with waist outside the recording medium, as taught by Curtis, for recording holograms having greater area, thus enabling easier reading operation.

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Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu (US 2002/0015376) in view of Tao (Optics Letters article) and further in view of Curtis (US 5,703,705).

Liu in view of Tao discloses all the limitations of the above claim except for teaching that the waists of the signal beams may be formed outside the holographic medium. Curtis discloses a method for holographic multiplexing wherein a plurality of holograms are recorded in the same spatial location, with the recording beams having their waists formed outside the recording medium (see Fig. 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a signal recording beam with waist outside the recording medium, as taught by Curtis, for recording holograms having greater area, thus enabling easier reading operation.

Claims 5-6, 14-19, 23-28, 38, 43-44, 52-57, 64, 66-67, 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu (US 2002/0015376).

Liu discloses all the limitations of the above claims except for showing the various types and locations of the spatial filter that substantially blocks the reconstruction of the second hologram, which is spatially overlapped with the first hologram. It would have been obvious to one of ordinary skill in the art at the time the invention was made to place the spatial filter before or after the holographic medium, pick the type among a block filter with an aperture of a certain size or an angular filter, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum ranges involves only routine skill in the art., *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235.

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Response to Arguments

Applicant's arguments with respect to claims 1, 32-34, 39, 71-73, 77 have been considered but are moot in view of the new ground(s) of rejection.

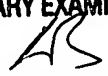
Conclusion

The allowability of claims 2-31, 35-38, 40-70, 74-76, 78-83 indicated in the Office Action of 3/29/2005 is hereby withdrawn. The examiner regrets any inconvenience caused to Applicant. The two main features of the claimed invention, namely the superposition of the recorded holograms such that the two waists of two adjacent holograms do not overlap, and the use of a spatial filter to substantially block any light from the cross-talk, recorded second hologram are taught by Liu.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Leo Boutsikaris whose telephone number is 571-272-2308.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LEONIDAS BOUTSIKARIS
PRIMARY EXAMINER


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August 21, 2005